



UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/328,972	06/09/99	FANTONE	S 0196/US

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MMC2/1025

EXAMINER

SMITH, Z

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 10/25/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/328,972

Applicant(s)

FANTONE ET AL.

Examiner

Zandra V. Smith

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11, 12, 15-17 and 19-21 is/are rejected.
- 7) ☒ Claim(s) 9, 10, 13, 14 and 18 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2-4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Information Disclosure Statement

The information disclosure statements filed July 13, 1999, September 27, 1999, and February 14, 2000 have been considered.

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not identify the citizenship and post office address of each inventor, specifically Daniel J. Braunstein.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, 11-12, 15-17, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Bille (5,062,702)* in view of *Bille (5,920,373)*.

As to **claims 1 and 15**, *Bille*'702 discloses a device for mapping corneal topography, comprising:

means (light source) for generating an output beam having a predetermined wavefront profile (col. 2, lines 25-35);

means for positioning the output beam such that the wavefront impinges on the tested element (eye) from a predetermine direction and then is reflected to travel opposite the predetermined direction as a distorted wavefront containing distortions that vary in accordance with the topography of the eye and the position of the output beam (col. 2, lines 40-42, col. 4, lines 44-45, and col. 5, lines 48-51); and

means for sampling the distorted wavefront profile at predetermined locations and determining local deformations corresponding to the sampled locations (col. 7, lines 34-37).

Bille'702 differs from the claimed invention in that a support for the tested element is not specifically provided, however since the tested element is a human eye, a support is inherently provided. Additionally, Bille'702 fails to specifically provide controllable positioning of the output beam with respect to the support for the eye, however to do so is well known as taught by Bille'373. In the same field of endeavor Bille'373 discloses a system for determining optical characteristics of a cornea that includes controllable positioning of the output beam with respect to the support (col. 2, lines 45-48). It would have been obvious to one having ordinary skill in the art to provide controllable positioning of the output beam with respect to the support to control focus and to ensure that the entire surface of the cornea is examined.

As to **claims 2 and 16**, the system of Bille'702 and Bille'373 discloses everything claimed, as applied above, in addition Bille'702 provides a representation of the topography of the cornea surface with a mathematical approximation comprising coefficients and variable (col. 7, lines 15-36). Bille'702 fails to specifically disclose the analytical means for the representation,

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however the use of a computer to analyze the data is well known as taught by Bille'373, where it is taught in (col. 6, lines 10-15) to use a computer to analyze the data. It would have been obvious to one having ordinary skill in the art at the time of invention to use a computer to analyze the data to provide more accurate and faster data analysis than a human being could provide.

As to **claims 3 and 17**, the system of Bille'702 and Bille'373 discloses everything claimed, as applied above, in addition Bille'702 provides formulation of the algorithm into a model of the corneal topography (col. 7, lines 20-28). Although Bille'702 fails to specifically state that the values are optimized it would have been obvious to one having ordinary skill in the art to optimize the values to provide the most accurate topographical image of the cornea.

As to **claim 4**, the system of Bille'702 and Bille'373 discloses everything claimed, as applied above, in addition Bille'702 provides a flat (plane) wavefront (col. 2, lines 28).

As to **claim 5**, the system of Bille'702 and Bille'373 discloses everything claimed, as applied above, in addition Bille'702 provides a spherical wavefront (col. 2, line 35).

As to **claim 6**, the system of Bille'702 and Bille'373 discloses everything claimed, as applied above, in addition Bille'702 provided collimating optics (col. 3, lines 67-68).

As to **claim 7**, the system of Bille'702 and Bille'373 discloses everything claimed, as applied above, in addition Bille'702 an objective lens is provided (col. 4, line 28). Although, Bille'702 fails to specifically disclose that the lens is well corrected, it would have been obvious to one having ordinary skill in to provide a well corrected lens since the examine takes Official Notice to the fact that well corrected lenses are corrected for any aberration in the lens surface, thereby, reducing aberration in the image.

As to **claim 11**, the system of Bille'702 and Bille'373 discloses everything claimed, as applied above, in addition Bille'702 provides a beam expander section (col. 4, lines 20-26).

As to **claim 12**, the system of Bille'702 and Bille'373 discloses everything claimed, as applied above, in addition Bille'702 a two dimension lens array is provided (col. 5, line 66 and fig. 3) to focus light onto a CCD (col. 5, line 34) and it can be seen in fig. 6A that the surface (82) of the CCD is two dimensional.

As to **claim 20**, Bille'702 discloses a device for mapping corneal topography, comprising: generating an output beam having a predetermined wavefront profile (col. 2, lines 25-35); positioning the output beam such that the wavefront impinges on the tested element (eye) from a predetermine direction and then is reflected to travel opposite the predetermined direction as a distorted wavefront containing distortions that vary in accordance with the topography of the eye and the position of the output beam (col. 2, lines 40-42, col. 4, lines 44-45, and col. 5, lines 48-51); and

sampling the distorted wavefront profile at predetermined locations and determining local deformations corresponding to the sampled locations (col. 7, lines 34-37).

Bille'702 differs from the claimed invention in that supporting the tested element is not specifically provided, however since the tested element is a human eye, support for the eye is inherently provided. Additionally, Bille'702 fails to specifically provide controlling the position of the output beam with respect to the support for the eye, however to do so is well known as taught by Bille'373. In the same field of endeavor Bille'373 discloses a system for determining optical characteristics of a cornea that includes controllable positioning of the output beam with respect to the support (col. 2, lines 45-48). It would have been obvious to one having ordinary

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skill in the art to provide controllable positioning of the output beam with respect to the support to control focus and to ensure that the entire surface of the cornea is examined.

As to **claim 21**, the system of Bille'702 and Bille'373 discloses everything claimed, as applied above, in addition Bille'702 provides a representation of the topography of the cornea surface with a mathematical approximation comprising coefficients and variable (col. 7, lines 15-36). Bille'702 fails to specifically disclose the analytical means for the representation, however the use of a computer to analyze the data is well known as taught by Bille'373, where it is taught in (col. 6, lines 10-15) to use a computer to analyze the data. It would have been obvious to one having ordinary skill in the art at the time of invention to use a computer to analyze the data to provide more accurate and faster data analysis than a human being could provide.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Bille (5,062,702)* and *Bille (5,920,373)* and further in view of *Abitol et al. (5,825,476)* cited by applicant.

As to **claim 8**, the system of Bille'702 and Bille'373 discloses everything claimed, as applied above, with the exception of a positive lens, however to do so is well known as taught by Abitol. Abitol discloses an apparatus for mapping optical elements that includes a positive lens (col. 7, lines 44-46). It would have been obvious to one having ordinary skill in the art at the time of invention to include a positive lens to provide the desired refraction.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Bille (5,062,702)* and *Bille (5,920,373)* and further in view of *Smith (5,350,374)*.

As to **claim 19**, the system of Bille'702 and Bille'373 discloses everything claimed, as applied above, with the exception of a pulsed light source, however to do so is well known as taught by Smith. Smith discloses a topography feedback control system for photoablation of the

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cornea of the eye (col. 1, lines 5-10) that includes a pulsed light source (col. 4, line 55). It would have been obvious to one having ordinary skill in the art at the time of invention to include a pulsed light source to minimize the exposure of the eye to harmful radiation.

Allowable Subject Matter

Claims 9-10, 13-14, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: prior art of record fails to specifically provide, in a system that uses wavefront analysis to determine the topography of a surface, a reflective means positioned with respect to the support for the surface, index mismatching material between layers of a lens array, microscope and telescope sections, and a scanning one dimensional photodetector.

Fax/Telephone Numbers

If the applicant wishes to send a Fax dealing with either a proposed amendment or for discussion for a phone interview, then the Fax should:

1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the Fax cover sheet; and

2) Should be unsigned by the attorney or agent.
This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

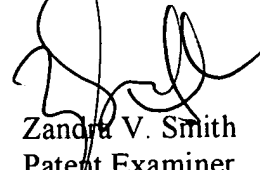
Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is:

(703) 308-7722

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Examiner* Zandra V. Smith whose telephone number is (703) 305-7776, and who is available Monday - Friday 6:30 a.m. - 4:00 p.m..

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.



Zandra V. Smith
Patent Examiner
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